THE INDUSTRIAL WORLD
ABSORBED THE AMERICAN MANUFACTURER AND IRON WORLD

ANCIENT vs. MODERN MACHINE SHOP EQUIPMENT·

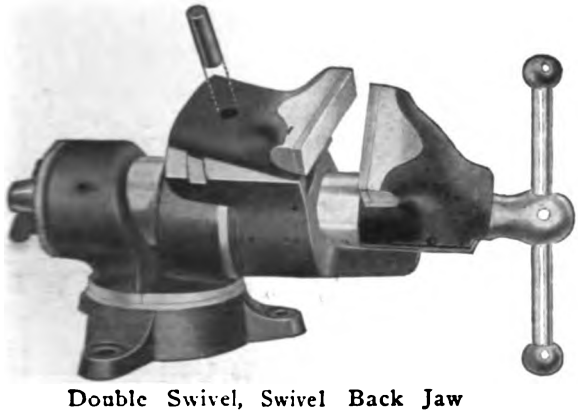
ALTHOUGH vises, as manufactured to-day, are practically of the same material and design as those of ten years ago, or even longer, the requirements of the same have increased almost 100 per cent. This increase of service is due to the marked advancement in machine shop equipment during very recent years when high-speed tool steel is being employed as the teeth of gigantic machines—the same work being accomplished in one-half the time at one-third the cost.

Strange as it might appear, the vise manufacturers have little realized the necessity of keeping abreast of the times, and consequently have permitted the world to pass on while they remained at a stand-still. The first, however, to appreciate the fact it The Pittsburgh Automatic Vise & Tool Company, of Pittsburgh, Pa., who placed upon the market a tool fully abreast with the demands of the Twentieth Century Machines.

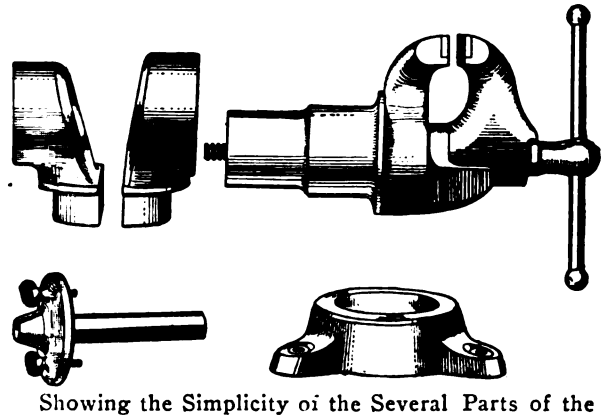
To accomplish this, every means of engineering ability and ingenuity, as well as the powers of the practical steel experts have been focused upon their tools. Accordingly, the slide bar, and front jaw (heretofore the acknowledged weakest portion of all other vises) is made from a solid piece of crucible steel, round in shape and absolutely unbreakable. The screw, upon which falls all the severe strains, is equally strengthened by being made from a solid forging of specially made steel, thus doing away with the present method, as practiced by nearly all other makers, of casting a cast iron head upon a threaded bar of steel. With these well-designed features scientifically carried out in construction, The "Pittsburgh" Vises are made worthy of the very high material from which they are composed.

Breaking away again from the common path of vise construction, the manufacturers have placed in their tools an alloy mixture of wonderful toughness and strength. Although it required almost thirteen years to perfect these vises it has required several years of experimenting to ascertain or secure the desired results in the way of a mixture.

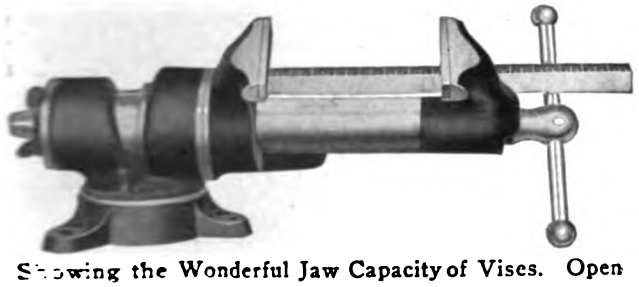
But with all these developed features, it posseses the distinctive feature of having its jaws revolve in a complete circle, as well as its base; thus describing and degree of two complete circles. But its powers do not stop here, for by the tightening upon the piece held in the jaws, both swivels are automatically locked, not to be moved by the heaviest blow or the severest pressure. Therefore all pins, levers, screws and bolts are done away with, at the same time that a tool is secured which is capable of be-



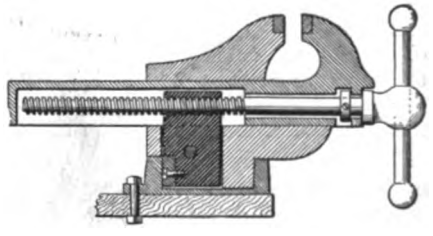
Double Swivel, Swivel Back Jaw Machinists' Vise.



Showing the Simplicity of the Several Parts of the Double Swivel Vise.



Showing the Wonderful Jaw Capacity of Vises. Open Twice the Width of Their Jaws.



Sectional View of Single Swivel Vise.

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ing instantly removed from one base to another. Accordingly its uses are manifold; the most important of which is its special adaptability as a universal chuck on the planer, drill press, shaper and other similar machines when the work is desired to be held at an angle and firmly. For such a purpose the vise is simply picked up out of its base and carried to the machine and inserted in another base which is kept bolted to the bed plate at all times, thus doing away with the trouble of undoing bolts and screws. The swivels being graduated, any angle or degree can instantly be secured.

When used upon the bench it is found of special service in cutting gears, filing or working on anything which requires the constant moving of the article, as the jaws can be turned as desired without the removal of the piece. This is also true with the sun rays or shadows at night, all of which can be avoided by its movement. Articles too heavy to be lifted upon the bench can be stood endwise upon the floor and its upper portion securely gripped with the entire capacity of the jaws.

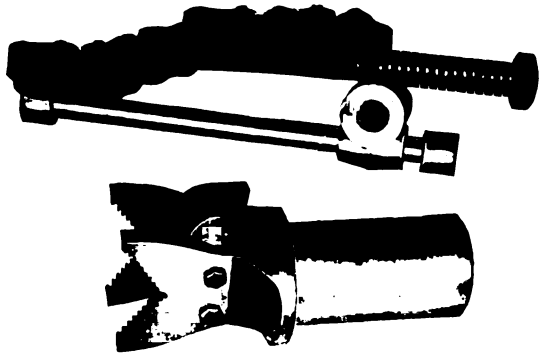
Another use to which such a tool is applied is when a face smaller than the width of the jaws is required. If desired, the jaws can be thrown to one side and the sides of the same placed in service, thus making two vises in one. If the stationary vise is desired, the two thumb screws on the rear can be slightly turned and both swivels securely locked. Any desired fraction at the points of swivels can also be thus had.

The vise itself is composed of eight sections or parts, which, when assembled, is simplicity itself. These consist of a front and rear jaw, two yokes, male and female screw, base and friction plate.

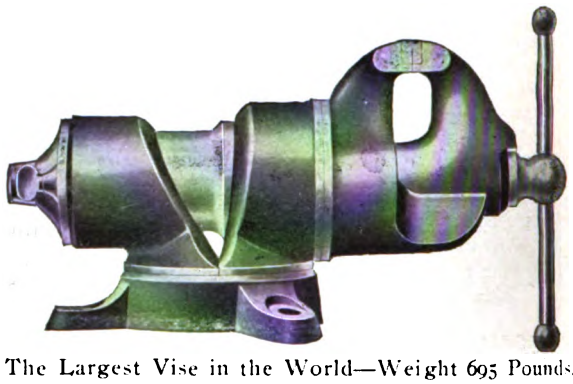
The base, which is adapted to be secured to any suitable support, is formed with an annular seat for the body of the vise. The body consists of two halves or yokes, each provided with a section, or half of a hub, seated in the base, and adapted to be slightly tilted in respect to each other and their seat, so that when they are drawn toward each other at their top they will be pressed outward below and thus locked frictionally in the base seat.

The rear jaw is adapted to be rotated about its axis within the body of the vise. It has two diameters, the larger one working in the front yoke, and the smaller one in the rear. The friction plate is affixed to the outer extremity of the jaw member. This cap bears against the outer edge of the rear yoke and serves as a support and bearing for the sleeve or nut. This possesses a head which bears against the outside of the friction plate or cap and extends thence through the same into the internal bore of the front jaw.

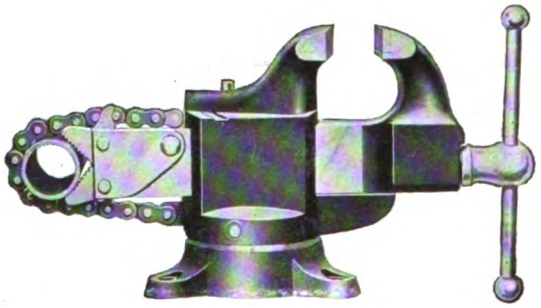
A special bearing is placed on the screw between its head and fixed col-



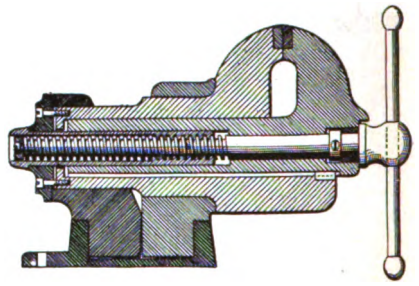
Mandrill, Jaws and Screw of the Portable Pipe Vise.



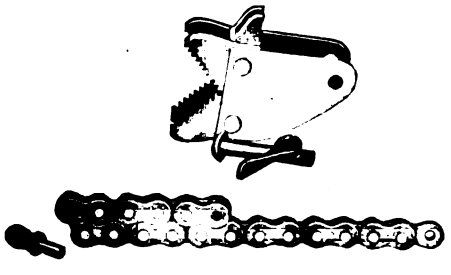
The Largest Vise in the World—Weight 695 Pounds.



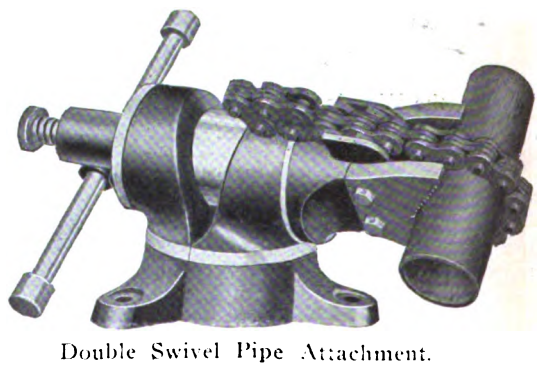
Single Swivel Automatic Vise, with Pipe Attachment.



Sectional View of Double Swivel Vise.



Single Swivel Pipe Attachment.



Double Swivel Pipe Attachment.

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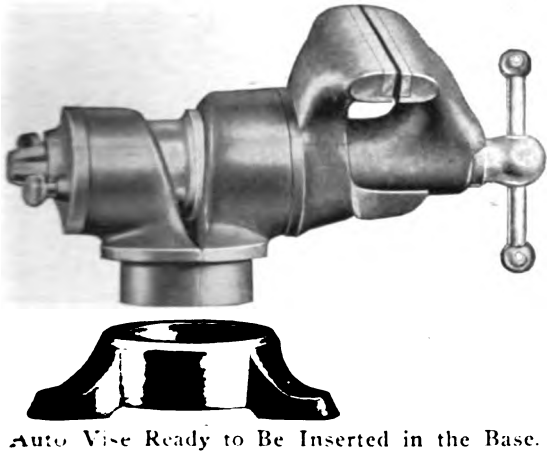
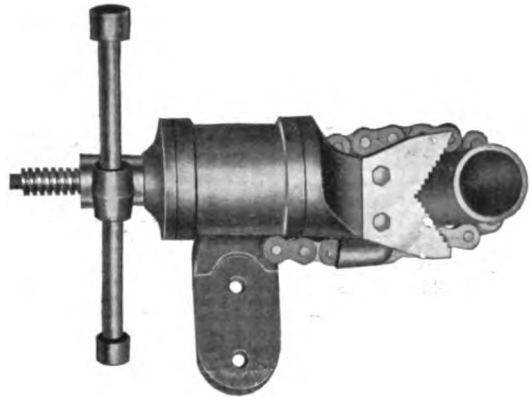
ler to afford freedom of turning, but it is designed to be driven or forced tightly upon its seat in the front jaw, so as to serve as a reliable backing for the collar when the screw is rotated to open the jaws. This also gives the head of the screw a solid bearing against the full stock of the front jaw; therefore there is nothing to break or give way or become weakened under the severe strains or pressure through the action of the screw. Thus it will be understood that when the screw is tightened it tilts the body sections towards each other and locks them against rotation to the base. The inner jaw member has a splined connection with the inner jaw, thus preventing its rotation in respect thereto.



Auto Vise Ready to Be Inserted in the Base.



Portable Pipe Vise, Weight 15 Pounds.

The Pittsburgh Single Swivel Vises.

The single swivel vise, although possessing but one movement, is also a marked advancement in vise construction. Unlike any other vise made, it is automatically locked by tightening on the piece of the jaws. No lever, pins, screws or other "in the way" appliances. By the lifting of the body of the vise from the base, the vise can readily be carried anywhere, thus making it most advantageous for outside work, such as steam shovel work, etc., the body of the vise being readily locked up for the night with the other tools. This vise, like that of the double swivel tool, can also be made stationary or any desired degree of friction in the swivels by the tightening of a small thumb screw in the base.

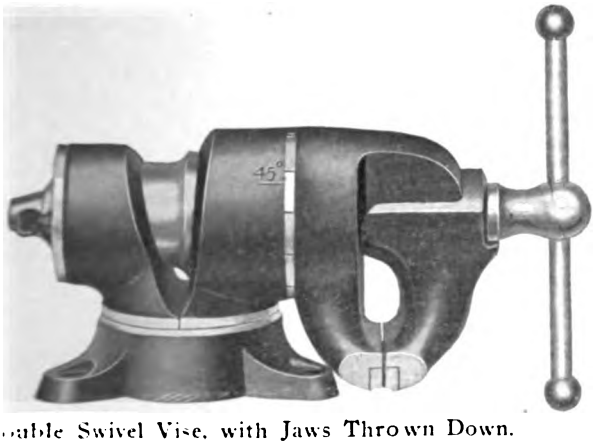
Thus a tool is secured absolutely free of the greatest cause of trouble to-day, the sticking, breaking and wearing of the pin so commonly seen in all the vises to-day, which not only causes the tool to chatter terribly while in use, but to break. These tools are also made from an alloy mixture guaranteed against breakage, or defects of any character.

The vise consists of but five parts: the rear and front jaws, screw, nut and base. The locking dog, or nut, is so constructed as to permit the screw to pass through its upper extremity. It is pivoted near its bottom upon an alloy steel bar supported by the base. Thus, when the jaws are tightened upon an object the screw draws the dog towards them, which naturally throws its bottom out against the walls of the base, thus locking it firmly, no matter what may be the pressure or blow.

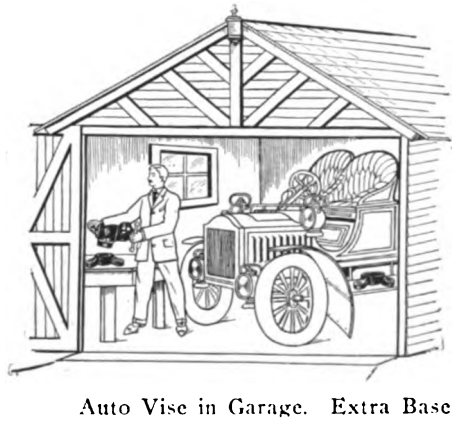
In conformity with the originality and usefulness of the previously described tools, the pipe attachment for the single swivel vise deserves mentioning.

Here ofore the pipe attachment for such a tool has been placed within the throat of the vise, which not only interfered with the operator while working with the ordinary jaws of the vise, but necessitated the opening of the jaws of the vise sufficiently wide for the reception of the pipe.

Consequently the inventors have placed this important attachment on the rear end of the slide bar, out of the way at all times of the operator. At the same time it can be swung around to the front of the bench when wanted or even to the side. It consists of a tool steel attachment, milled perfectly to size, the two sides straddling the end of the slide bar. These are held in place by a bolt. A double linked chain, the pivot pins of which project beyond the sides of the links at each side, is attached at one end by a lug or pin to the body of the vise, below the slide bar. By placing the tube or pipe in position, the chain is brought around it and fastened on the lugs on the upper portion of the attachment. The screw is then given a half-turn, which throws the drawbar back, thus tightening the chain upon the pipe, and at the same time locking the swivel movement.



Double Swivel Vise, with Jaws Thrown Down.



Auto Vise in Garage. Extra Base on Running Board of Machine.

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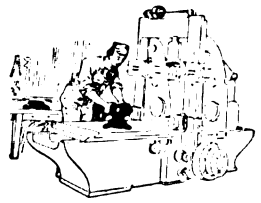
All the "Pittsburgh" four and five-inch jaw single swivel vises are fitted and rigged for this attachment. It can be placed in position or removed instantly and the jaws can be taken and dressed at any time without interfering with the vise. It possesses a capacity of any size pipe from ⅛in. to 6in. inclusive.

Pittsburgh Double Swivel Pipe Vise.

A pipe vise capable of having its jaws swivel or move in any direction is certainly a convenience which is particularly useful and unique to the many needs and requirements of the plumbing and fitting trade. The provision, however, of the capacity of ⅛in. to 6in. inclusive in one vise extends the field of the tool to a remarkable degree.

The double swivel automatic pipe vise is capable of describing any degree of two complete circles, thus facilitating the holding of the work to the best advantage and convenience. In other words, it possesses the same movements as the double swivel mechanic vise. The pipe being placed in the jaws, the flat linked chain is brought around, the nearest pivot pins being dropped into the lug on top. By a slight movement of the screw, the pipe is firmly gripped, both swivels being automatically locked.

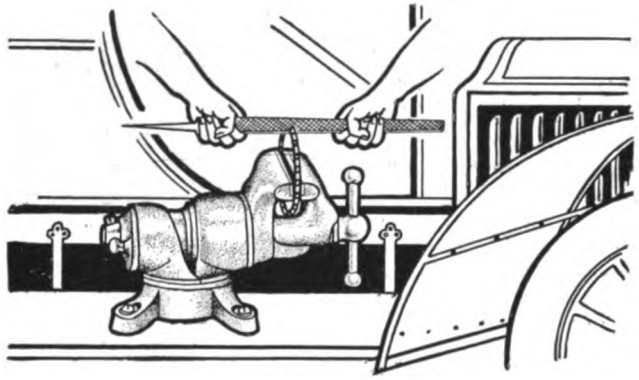


Ideal as a gig, being readily removed from bench to extra base on machine.

These universal movements not only permit the vise to serve as a pipe vise, but as a universal chuck for holding a pipe, nipple, elbow or other parts when it is desired to work the same on the drill press or any other machinery, the pipe being held firmly and at any angle.

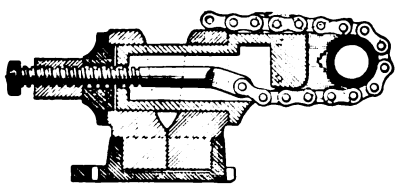
Up to the introduction of this vise there was no pipe vise on the market capable of even one swivel, not to say anything about two movements of the jaws.

The principle upon which these pipe vises operate are identical to those of the other double swivel tool as made by this company. The vise is composed of six parts, or sections: the screw or chain, jaws and mandril, two yokes, friction plate and base. The base and the two yokes are of the same design and size as that of the 3½in. jaw double swivel machinists' vise, thus making these two vises interchangeable, or permitting the machinists' vise to possess a pipe attachment. The body or mandril is also similar, but instead of having the ordinary vise jaws at its extremity, it has a specially constructed head, as shown in the accompanying cut. The friction plate is affixed to the outer extremity of the jaw member. This cap bears against the outer edge of the rear yoke and serves as a support and bearing for the screw.



The Auto Vise in Operation Upon Running Board of Auto.

The chain enters the hollow interior of the body of the jaw through an opening back of the head, and is attached to the inner portion of the screw. Thus, when one end of the chain is held firmly by the lugs on top, and the handle bar, or nut of the screw is given a few twists, the chain is tightened. The nut on the handle bar is forced against the rear yokes. Thus it will be understood that when the screw is tightened it tilts the body sections toward each other and locks them against rotation in the base.



Sectional view of the Single Swivel Vise.

As in the case of the other double swivel vise, any desired friction can be had by the adjusting of two small set screws in the friction plate. A stationary vise may thus be secured.

Pittsburgh Portable Pipe Vise.

Heretofore the workman who had outside work to perform, which required a pipe vise, had to lug a heavy, clumsy vise along, weighing 20 or 30 pounds, and having a very limited capacity as to size of pipe it would hold.

Appreciating this fact, and realizing the great need of a portable vise for pipe work both in the field and on newly constructed buildings, the Pittsburgh Automatic Vise & Tool Company has placed upon the market a very light and handy tool, capable of being swiveled. Although weighing only 15 pounds, it possesses a jaw capacity of ⅛in. to 6in. inclusive.

It consists of four parts: hub, or base; mandril, or jaw; screw and chain and friction plate. The base, or hub, is so designed as to be readily attached to any suitable support, a post, tree, beam, fence, or anything else.

The hub, or mandril, is supported by a casing, or band, which serves as the base. The collar of the hub fits snugly against one edge of this casing while the friction plate fits against the opposite side, or edge. Similar to the double swivel pipe vise, the chain is placed around the object and the screw given a turn, forcing the nut against the friction plate and locking both the swivel and the pipe grip.

Admirably adapted for field work.

Light, strong and convinient for holding pipe anywhere.

Pittsburgh Automatic Vise.

It is often necessary, when the automobilist is so unlucky as to be forced to make roadside repairs, to do all kinds of stunts to hold a bit of metal steady enough to file; and it is a very difficult matter to file off more than a very small amount of metal while holding the work by hand. The fence post and a piece of wire is hardly more satisfactory. Some kind of a vise has been greatly needed, but it has to be very light, small, instantly operated or removed from tool box to place wanted, and, above all, must have a large opening. The Pittsburgh Automatic Vise & Tool Company has brought out a vise exactly suited to these conditions. To the running board or step of the car is attached a small and unobstrusive base, which is a fixture, and the vise is attached to

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this when it is to be used, and at other times is packed away in the tool box. The base is so designed as to permit no accumulation of mud, water or other substances which would choke the same up and interfere with the insertion of the body of the vise. There is no complication about the insertion of the vise into the base—it is simply set in the socket, in which it is perfectly free to turn in a complete circle. As soon as the jaws are tightened on a piece of work, however, the vise is automatically clamped in its base and cannot move. Release the grip somewhat, and the vise is again free to swivel.

Grips in any position.

No pins to stick, wear or cause chattering.

There is another swiveling motion. The jaws can be swung clear around on the axis of the screw, and, as in the case of the horizontal movement, the tightening of the jaws on the work clamps the swivel automatically. These movements make it possible to get the work into almost any position of access in filing and so on. The vise has 1¾in. jaws, opening 3½in., weighs 3½ pounds, and is nickleplated. The parts subjected to stresses are of an alloy steel, and the screw is a steel forging; all parts being interchangeable. This tool has filled a very long-wanted vacancy in the automobilist's kit.

The Largest Vise in the World.

A vise weighing six hundred and ninety-five pounds is truly a novel, if

Jaws turn in any direction withstands heaviest and severest work.

Holds the work firmly and at any angle on the drill press.

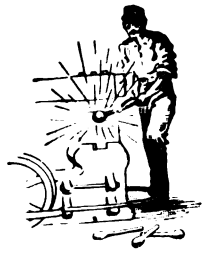
not wonderful, sight to the oldest mechanic.

Just why such a tool was created is a puzzle to many, but not to those who have paused long enough to study the wonderful growth of machine shop equipment. For the past five years machinery of every description has increased double its former size and weight, due almost altogether to the phenomenal requirements of the present manner of working.

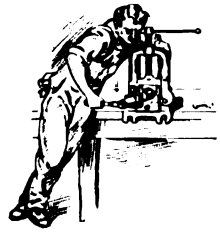
During these days of speed and economy little is left undone to secure the maximum speed at the minimum cost. To accomplish this, strength and weight have closely been adhered to in the construction of all machinery.

But though this has been the case, the vise, the very heart of the machine shop, has retained its old weight and size, with the result that it is to-day the weakest of machine shop equipment, instead of being the most powerful.

Realizing this fact, as well as that



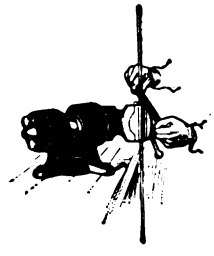
The screws used on our vises are all forged from solid steel billets. Heads are not cast as other makes.



The old style Pipe Vise forcing the operator into all manner of awkward positions.

there was a volume of work done everyday by primitive means because there was not a vise sufficiently large to grip and withstand the work, The Pittsburgh Automatic Vise & Tool Company designed and constructed a vise fully abreast with the other equipment. As a result a vise weighing 695 pounds, 36 inches long, 18 inches high, and a jaw opening of 15 inches, was created. The weight is admirably distributed to secure every possible atom of strength. Accordingly the neck of the jaws are over 4½ inches thick, while the slide bar is 7 inches in diameter.

Similar to their regular vises, this king of vises is capable of having its



Holds the most delicate work to best advantage.

jaws revolve in any direction. So perfect is the workmanship that the huge jaws can be made to describe any degree of two complete circles simply by the pressure of the little finger. The work being once tightened between the jaws, the powers of heaven alone could move them.

Ship building yards, railroad and forge shops, and the many other factories where gigantic work is performed, find such a tool of wonderful service.

Due to its wonderful grip and strength, coupled with its double swivel movement, work too heavy to lift into a vise, can readily be stood on end upon the floor and the jaws thrown at right angle, fully gripping the entire stock. The severest work can then be performed upon it. The vise is exactly two and one-half times as heavy as the heaviest vise made today.

ESCALATORS FOR HANDLING CROWDS.

The New York & Long Island Railway Company, known as the Belmont of old Steinway Tunnel System, has awarded a contract to the Otis Elevator Company for the two largest escalators ever built, to be installed in the Manhattan terminal of that system at Forty-second street, between Lexington and Third avenues. Trolley cars instead of trains are to be operated in this tunnel, and these, running on short headway, provide a tremendous capacity. It is estimated that the capacity will be at least equal to that of the trains of the present Brooklyn bridge during rush hours, and the escalator equipment above referred to is equal in point of capacity to that of the entire stairway equipment of the Manhattan end of the Brooklyn bridge. Furthermore, not only will the escalators be sufficient to handle any number of people up to the capacity of the trolley cars of the tunnel, but they will also serve to marshal the crowds into streams of people moving uninterruptedly and not coming into conflict with one another.

The escalators will provide service between levels something over 55 feet apart and will be arranged side by side. Most of the time one will be operated ascending and the other descending, but during the morning rush hour both will be operated ascending.

As an appropriation has already been made for a new Manhattan terminal to the Brooklyn bridge, which is to be located underground, it will be interesting to note whether this municipally owned enterprise will be as progressive as the privately owned one in the matter of installing moving stairways.

The escalators, in common with the entire terminal, possess no wood work or other inflammable material. As is well known, the escalator is the invention of Charles D. Seeberger, who is head of that department of the Otis Elevator Company.

The French census shows that France has a population of 39,252,267, an increase of only 290,322 over that of 1901.

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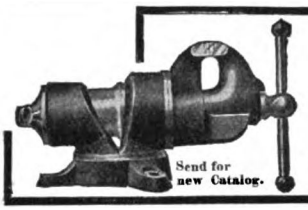

695 POUNDS

of solid mechanical muscle and brain constitutes

The "Pittsburgh" Railroad Vise,

capable of turning in any direction.
Opens 15 inches. Guaranteed.

The Pittsburgh Automatic Vise & Tool Co,
Pittsburgh, Pa.

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